WHAT IS CLAIMED IS:

1. A chemical moiety comprising a fluorescent polymer bound together by a first tethering element to a recognition element which binds to a target nucleic acid, said recognition element being further bound together by a second tethering element to a property altering element which alters fluorescence emitted by said fluorescent polymer when complexed together to a distinguishable degree, wherein, in the presence of binding of said recognition element to said target nucleic acid, the fluorescence emitted by said fluorescent polymer is altered from that emitted when said binding between said recognition element and said target nucleic acid does not occur.

2. The chemical moiety of Claim 1, wherein said recognition element is a sequence of peptide nucleic acids that can recognize and hybridize with said target nucleic acid.

3. The chemical moiety of Claim 1, wherein said sequence of peptide nucleic acids is a base sequence complementary to a member selected from the group consisting of a sequence of single stranded DNA and a sequence of single stranded RNA.

4. The chemical moiety of Claim 1, wherein said property altering element is selected from the group consisting of methyl viologen, quinones, metal complexes, fluorescent dyes, nonfluorescent dyes and energy accepting, electron accepting and electron donating moieties.

5. The chemical moiety of Claim 1, wherein said first and second tethering elements are selected from the group consisting of a single bond, a single divalent atom, a divalent chemical moiety of up to 10 carbon atoms in length and a multivalent chemical moiety.

6. The chemical moiety of Claim 1, wherein said fluorescent polymer comprises repeat units including a conjugated backbone.

7. The chemical moiety of Claim 6, wherein said fluorescent polymer is selected from a group of conjugated polymers or oligomers consisting of poly phenylene vinylene derivatives, poly (phenyleneethynylene) derivatives, polyphenylene derivatives, polythiophene derivatives, polyfluorine derivatives, neutral, anionic and cationic conjugated polymers.

8. The chemical moiety of Claim 1, wherein said fluorescent polymer comprises repeat units each containing a fluorescent dye pendant on a backbone moiety.

9. The chemical moiety of Claim 8, wherein the number of repeat units is greater than or equal to 33.

10. The chemical moiety of Claim 9, wherein said fluorescent polymer is a J-aggregate.

11. The chemical moiety of Claim 8, wherein said fluorescent dye is selected from the group consisting of symmetrical cyanine dye chromophores, unsymmetrical cyanine chromophores, merocyanine dyes, positively charged dye chromophores, negatively charged dye chromophores and neutral dye chromophores.

12. The chemical moiety of Claim 1, wherein said fluorescent polymer is affixed to a support.

13. The chemical moiety of Claim 12, wherein said support is selected from the group consisting of a fiber optic, a flexible plastic substrate, porous beads solid beads, organic polymers, natural clays, synthetic clays particles, membranes, microporous gels and silica.

14. A method for detecting a target nucleic acid in a sample comprising:

determining the fluorescence emitted by said chemical moiety of Claim 1 in the absence of a sample;

adding said chemical moiety to said sample;

permitting said recognition element to bind with target nucleic acid present in said sample;

determining the fluorescence emitted by said fluorescent polymer after said permitting step;

wherein a difference in fluorescence emitted after said permitting step compared with that emitted in the absence of said sample is indicative of the presence of said target nucleic acid.

15. The method of Claim 14, wherein the amount of target nucleic acid present in said sample is correlated with the amount of said difference in fluorescence.

16. The method of Claim 14, wherein said recognition element is a sequence of peptide nucleic acids that can recognize and hybridize with said target nucleic acid.

17. The method of Claim 16, wherein said sequence of peptide nucleic acids is a base sequence complementary to a member selected from the group consisting of a sequence of single stranded DNA and a sequence of single stranded RNA.

18. A method for determining the presence of a target nucleic acid in a sample comprising:

complexing a complement of the target nucleic acid to a chemical moiety of Claim 1 to form a PNA:complement nucleic acid complex;

adding said PNA:complement nucleic acid complex to said sample;

permitting said target nucleic acid to compete with said chemical moiety for the binding of said complement; and

determining the fluorescence emitted by said polymer after said permitting step;

wherein the difference in fluorescence emitted after said permitting step compared with that emitted before said permitting step is indicative of the presence of said target nucleic acid.

19. The method of Claim 18, wherein the amount of target nucleic acid present in said sample is correlated with the amount of said difference in fluorescence.

20. The method of Claim 18, wherein said recognition element is a sequence of peptide nucleic acids that can recognize and hybridize with said target nucleic acid.

21. The method of Claim 20, wherein said sequence of peptide nucleic

acids is a base sequence complementary to a member selected from the group consisting of a sequence of single stranded DNA and a sequence of single stranded RNA.